

Appl. No.09/915,188
Amdt. Dated December 18, 2003
Reply to Office action of September 23, 2003

REMARKS

The Examiner has objected to the disclosure, stating that the inventors should not be listed in the specification. The applicants have amended the specification to delete the listing of the inventors. No new matter has been added.

The applicants have canceled claims 4, 8, and the second occurrence of claim 76. Claim 82 has been added. These amendments find support in various parts of the specification, for example in the Abstract, the Summary, canceled claims 4 and 8, the second claim 76, and Fig. 1, and thus no new matter is introduced. Claims 1-3, 5-7, and 9-82 are now pending in the application. Favorable reconsideration of this application is respectfully requested in light of the above amendments and the following detailed discussion.

Claim Objections

The Examiner has objected to claims 2-81 for improper grammatical structure. The applicants have amended claims 2-81 accordingly to remove the improper grammatical structure.

The Examiner has objected to claims 40 and 58 for reciting "the state of a sensor" instead of "a state of a sensor." The applicants have amended claims 40 and 58 as suggested.

The Examiner has objected to claims 41 and 59 for reciting "voltage determine sensor state" instead of "voltage to determine sensor state." The applicants have amended claims 41 and 59 as suggested.

Appl. No.09/915,188
Amdt. Dated December 18, 2003
Reply to Office action of September 23, 2003

The Examiner has objected to the subject invention having two claims 76. The applicants have canceled the second claim 76, added new claim 82 to replace the second claim 76, and have amended claim 77 to depend from new claim 82.

The applicants have changed RFA to RFI in claim 69 to correctly identify radio frequency interference, see p. 25, lines 14-15 of the disclosure as filed.

No new matter has been added as a result of the above-stated corrections. The applicants respectfully request that the Examiner reconsider and withdraw these objections.

Claim Rejections – 35 U.S.C. § 112

The Examiner has rejected claim 17 under 35 U.S.C. § 112, second paragraph for insufficient antecedent basis for the limitation “said external controller.” The applicants have amended claim 17 to now recite “an external controller.” Accordingly, the rejection of claim 17 should be withdrawn.

Claim Rejections – 35 U.S.C. § 102

1. The Examiner has rejected claims 1-3, 45-47, and 64-65 under 35 U.S.C. § 102(b) as being anticipated by Diekhans et al. (U.S. 5,043,861, hereinafter Diekhans). The applicants have amended independent claim 1 to recite the limitations of, “wherein said interface couples with said sensor or said actuator exclusively through only said first and second electrical terminals,” taken from original claim 4. As a result, claims 2-3 and 64-65, which depend directly or indirectly from claim 1, also include this limitation. Similarly, the applicants have amended claim 45 to include the limitation,

Appl. No.09/915,188
Amdt. Dated December 18, 2003
Reply to Office action of September 23, 2003

“exclusively coupling said sensor or actuator with only first and second electrical terminals” As a result, claims 46-47, which depend directly or indirectly from claim 45, also include this limitation. After carefully studying Diekhans, the applicants can find nowhere in Diekhans where these limitations are taught or suggested.

Therefore, claims 1-3, 45-47, and 64-65 of the present application are not anticipated by Diekhans, as the inventions defined thereby are not identically disclosed in Diekhans, as required by 35 U.S.C. § 102(b). Consequently, the applicants respectfully submit that claims 1-3, 45-47, and 64-65 of the present application are not anticipated under 35 U.S.C. § 102 by the Diekhans patent, and that said claims should be allowed over Diekhans. Accordingly, favorable consideration of claims 1-3, 45-47, and 64-65 is respectfully requested.

2. The Examiner has rejected claims 6-20, 22-44, and 49-51, 53, 55, 58-62, 79, and 81 under 35 U.S.C. § 102(b) as being anticipated by McLeish et al. (U.S. 5,014,238, hereinafter McLeish). The applicants have amended independent claims 6 and 44 to recite the limitation of, “a first port having only first and second terminals for exclusively coupling said interface to a first external device.” As a result, claims 7-20, 22-43, 53, 55, 58-62, 79, and 81-82, which depend directly or indirectly from claim 6, also include this limitation. Also, the applicants have amended the first element paragraph of claim 49 to recite the limitation of, “an output circuit having only first and second terminals that exclusively communicate an output command” As a result, claims 50-51, which depend directly from claim 49, also include this limitation. After carefully studying McLeish, the applicants can find nowhere in McLeish where these limitations are taught or suggested.

Appl. No.09/915,188
Amdt. Dated December 18, 2003
Reply to Office action of September 23, 2003

Therefore, claims 6-20, 22-44, and 49-51, 53, 55, 58-62, 79, and 81-82 of the present application are not anticipated by McLeish, as the inventions defined thereby are not identically disclosed in are not identically disclosed in McLeish, as required by 35 U.S.C. § 102(b). Consequently, the applicants respectfully submit that claims 6-20, 22-44, and 49-51, 53, 55, 58-62, 79, and 81-82 of the present application are not anticipated under 35 U.S.C. § 102 by the McLeish patent, and that said claims should be allowed over McLeish. Accordingly, favorable consideration of claims 6-20, 22-44, and 49-51, 53, 55, 58-62, 79, and 81-82 is respectfully requested.

Claim Rejections – 35 U.S.C. § 103

1. The Examiner has rejected claims 4, 5, and 48 under 35 U.S.C. § 103(a) as being unpatentable over Diekhans. The Examiner concedes that, “Diekhans does not explicitly teach coupling with said sensor or said actuator exclusively through only said first and said second electrical terminals.” However, the Examiner indicates that, “Official notice is being given that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Diekhans by coupling with a sensor or actuator exclusively through first and second electrical terminals, because this is one of several known and obvious design choices.”

In rejecting claims 4, 5, and 48, the Examiner gave Official notice (please see MPEP 2144.03) that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Diekhans by coupling with a sensor or actuator exclusively through first and second electrical terminals. The applicants, however, have canceled claim 4 and added the

Appl. No.09/915,188
Amdt. Dated December 18, 2003
Reply to Office action of September 23, 2003

limitation of "said interface couples with said sensor or said actuator exclusively through only said first and second electrical terminals" to the independent claims 1 and 45.

As disclosed in the second paragraph of the Detailed Description of the present application, it is the applicants' discovery that a comprehensive input/output device and associated method may be provided which comprise a universal electronic interface between a wide variety of sensors and actuators that incorporate only two terminals. As the applicants teach in paragraph three of the Background, the alternative to the subject invention is to, "handle or interface over fifty different signal types for existing sensing, actuating and control applications," which is the kind of art that the subject invention was intended to replace. Since there is no support in the record to support the Examiner's opinion that it would have been obvious to provide only two terminals, the applicants respectfully traverse the Examiner's rejections and request that the Examiner provide any specific information which might support the Examiner's position in an affidavit, as required by 37 C.F.R. § 1.104(d)(2). The mere allegation that the differences between the claimed subject matter and the prior art are obvious does not create a presumption of unpatentability. *In re Soli*, 137 USPQ 797 (CCPA 1963).

The applicants submit that since the invention defined in independent claims 1 and 45 are not taught by Diekhans, taken alone or in combination, then claims 2-3, 5, 46-48, 52, 54, 56, and 64-65, which depend directly or indirectly from claims 1 or 45, and thus contain all of the limitations thereof, are not obvious over this reference. Accordingly, reconsideration of the rejection of said claims is respectfully requested.

Appl. No.09/915,188
Amdt. Dated December 18, 2003
Reply to Office action of September 23, 2003

2. The Examiner has rejected claims 52 and 54 under 35 U.S.C. § 103(a) as being obvious over Diekhans in view of Johnson (U.S. 5,264,958, hereinafter Johnson).

Specifically to the combination of Diekhans and Johnson, the Examiner states that Diekhans does not specifically disclose the use of a protection circuit, however, Johnson does disclose the use of such a circuit. After thoroughly reading the Johnson reference, the applicants can find no disclosure in Johnson to overcome the above-stated shortcomings (i.e., the use of "only first and second electrical terminals for exclusively coupling with said sensor or said actuator") of Diekhans or any combination of the teachings of Johnson and Diekhans which would teach or suggest the invention defined by independent claim 1, from which claims 52 and 54 depend. It is the applicants' position that claims 52 and 54 are not obvious over the cited references as those references fail to disclose or suggest at least the above-stated features of the subject invention.

The applicants submit that since the invention defined in claim 1 is not taught by Diekhans or Johnson, taken alone or in combination, then claims 52 and 54, which depend directly from claim 1 and thus contain all of the limitations thereof, are not obvious over these references. Accordingly, reconsideration of the rejection of dependent claims 52 and 54 is respectfully requested.

3. The Examiner has rejected claims 56 and 57 under 35 U.S.C. § 103(a) as being obvious over Diekhans in view of McLeish.

Specifically to the combination of Diekhans and McLeish, the Examiner states that

Appl. No.09/915,188
Amdt. Dated December 18, 2003
Reply to Office action of September 23, 2003

Diekhans does not specifically disclose the use of an input current detection circuit that detects the state of a sensor directly rather than detecting the sensor voltage, however, McLeish does disclose the use of such a circuit. After thoroughly reading the McLeish reference, the applicants can find no disclosure in McLeish to overcome the above-stated shortcomings (i.e., the use of "only first and second electrical terminals for exclusively coupling with said sensor or said actuator") of Diekhans or any combination of the teachings of McLeish and Diekhans which would teach or suggest the invention defined by independent claim 1, from which claims 56 and 57 indirectly depend. It is the applicants' position that claims 56 and 57 are not obvious over the cited references as those references fail to disclose or suggest at least the above-stated features of the subject invention.

The applicants submit that since the invention defined in claim 1 is not taught by Diekhans or McLeish, taken alone or in combination, then claims 56 and 57, which depend indirectly from claim 1 and thus contain all of the limitations thereof, are not obvious over these references. Accordingly, reconsideration of the rejection of dependent claims 56 and 57 is respectfully requested.

4. The Examiner has rejected claim 21 under 35 U.S.C. § 103(a) as being unpatentable over McLeish.

Regarding this rejection, the Examiner states that McLeish does not specifically disclose the use of a fifth terminal, however, McLeish does disclose the use of multiple terminals. After thoroughly reading the McLeish reference, with regard to the multiple terminals, the applicants

can find no disclosure in McLeish to overcome the above-stated shortcomings (i.e., the use of "a first port having only first and second terminals for exclusively coupling said interface to a first external device") of McLeish, which would teach or suggest the invention defined by independent claim 6, from which claim 21 directly depends. It is the applicants' position that claim 21 is not obvious over the cited reference as that reference fails to disclose or suggest at least the above-stated features of the subject invention.

The applicants submit that since the invention defined in claim 6 is not taught by McLeish, then claim 21, which depends directly from claim 6 and thus contains all of the limitations thereof, is patentable over this reference. Accordingly, reconsideration of the rejection of dependent claim 21 is respectfully requested.

5. The Examiner has rejected claims 66-72 and 76-78 under 35 U.S.C. § 103(a) as being obvious over McLeish in view of Campau et al. (U.S. 6,206,482, hereinafter Campau).

Specifically to the combination of McLeish and Campau, the Examiner states that McLeish does not specifically disclose (claims 66 and 68) providing a constant current control circuit for controlling a current drawn by a load device in order to open or close a valve, (claim 67) providing the load device including a power level actuator in a process or machine, (claim 69) the load device including an inductive load component, the constant current circuit being operative to reduce EMI and RFA caused by energizing or de-energizing the load device, (claim 70) the load device includes a relay device, (claim 71) the load device includes a solenoid valve device, (claim 72) the constant current circuit eliminating the need for suppression circuits to

Appl. No.09/915,188
Amdt. Dated December 18, 2003
Reply to Office action of September 23, 2003

suppress turn-on and turn-off mechanical shock to electromechanical devices and inductive loads, and (claim 76) the load device includes an inductive load component and the constant current circuit reducing destructive effects both human and mechanical of inductive $L(di/dt)$ based transients that occur when de-energizing inductive loads. However, the Examiner asserts that Campau does teach these elements.

After thoroughly reading the Campau reference the applicants can find no disclosure in Campau to overcome the above-stated shortcomings (i.e., the use of "a first port having only first and second terminals for exclusively coupling said interface to a first external device") of McLeish, or any combination of the teachings of McLeish and Campau which would teach or suggest the invention defined by independent claim 6, from which claims 66-72 and 76-78 directly or indirectly depend. It is the applicants' position that claims 66-72 and 76-78 are patentable over the cited references as those references fail to disclose or suggest at least the above-stated features of the subject invention.

The applicants submit that since the invention defined in claim 6 is not taught by McLeish or Campau, taken alone or in combination, then claims 66-72 and 76-78, which depend directly or indirectly from claim 6 and thus contain all of the limitations thereof, are not obvious over these references. Accordingly, reconsideration of the rejection of dependent claims 66-72 and 76-78 is respectfully requested.

6. The Examiner has rejected claims 73-75 under 35 U.S.C. § 103(a) as being obvious over McLeish in view of Campau and in further view of Thomas et al. (U.S. 4,267,439,

Appl. No.09/915,188
Amdt. Dated December 18, 2003
Reply to Office action of September 23, 2003

hereinafter Thomas).

Specifically to the combination of McLeish, Campau and Thomas, the Examiner acknowledges that McLeish does not specifically disclose (claims 73-75) the use of an incandescent lamp in conjunction with a constant current circuit. However, the Examiner asserts that Thomas does teach these elements. After thoroughly reading the Thomas reference, the applicants can find no disclosure in Thomas to overcome the above-stated shortcomings (i.e., the use of "a first port having only first and second terminals for exclusively coupling said interface to a first external device") of McLeish, or any combination of the teachings of McLeish, Campau, and Thomas which would teach or suggest the invention defined by independent claim 6, from which claims 73-75 directly or indirectly depend. It is the applicants' position that claims 73-75 are patentable over the cited references as those references fail to disclose or suggest the above-stated features of the subject invention.

The applicants submit that since the invention defined in claim 6 is not taught by McLeish, Campau, or Thomas, taken alone or in combination, then claims 73-75, which depend directly or indirectly from claim 6 and thus contain all of the limitations thereof, are not obvious over these references. Accordingly, reconsideration of the rejection of dependent claims 73-75 is respectfully requested.

7. The Examiner has rejected claim 80 under 35 U.S.C. § 103(a) as being obvious over McLeish in view of Galecki et al. (U.S. 6,308,231, hereinafter Galecki).

Specifically to the combination of McLeish and Galecki, the Examiner states that

Appl. No.09/915,188

Amdt. Dated December 18, 2003

Reply to Office action of September 23, 2003

McLeish does not specifically teach forming the interface on a single printed circuit substrate.

However, Galecki does teach these elements. After thoroughly reading the Galecki, reference the applicants can find no disclosure in Galecki to overcome the above-stated shortcomings (i.e., the use of "a first port having only first and second terminals for exclusively coupling said interface to a first external device") of McLeish or any combination of the teachings of McLeish and Galecki which would teach or suggest the invention defined by independent claim 6, from which claim 80 directly depends. It is the applicants' position that claim 80 is patentable over the cited references as those references fail to disclose or suggest the above-stated features of the subject invention.

The applicants submit that since the invention defined in claim 6 is not taught by McLeish or Galecki, taken alone or in combination, then claim 80, which depends directly from claim 6 and thus contains all of the limitations thereof, is not obvious over these references. Accordingly, reconsideration of the rejection of dependent claim 80 is respectfully requested.

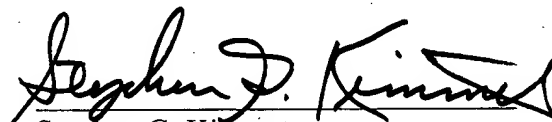
Appl. No.09/915,188
Amdt. Dated December 18, 2003
Reply to Office action of September 23, 2003

CONCLUSION

For all the reasons described in the preceding paragraphs, the applicants respectfully submit that the present application is now in condition for allowance. Accordingly, a timely action to that end is courteously solicited.

If the Examiner has any remaining questions or concerns, or would prefer claim language different from that included herein, the favor of a telephone call to the applicants' attorneys/agent is requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Stephen G. Kimmet", is written over a horizontal line.

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